

ABSTRACT

A "chained implant" technique forms a body region in a trench gated transistor. In one embodiment, a succession of "chained" implants can be performed at the same dose but different energies. In other embodiments different doses and energies can be used, and particularly, more than one dose can be used in a single device. This process produces a uniform body doping concentration and a steeper concentration gradient (at the body-drain junction), with a higher total body charge for a given threshold voltage, thereby reducing the vulnerability of the device to punchthrough breakdown. Additionally, the source-body junction does not, to a first order, affect the threshold voltage of the device, as it does in DMOS devices formed with conventional diffused body processes.